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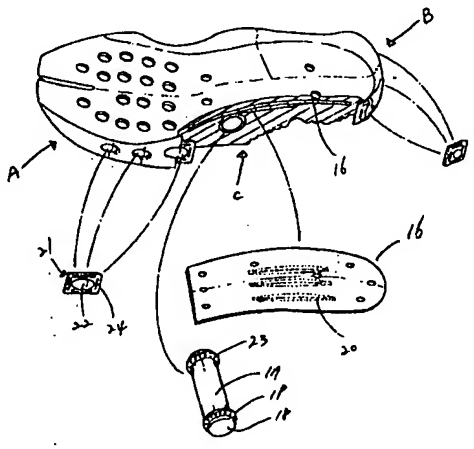
(54) Shoe sole without heel and with cushion

(57) A shoe sole having no heel and with the cushion improved is disclosed, which gives an athletic effect same as a mountain climbing during a usual walking, and the waist is made straightened, thereby correcting the posture of a walker.
The heelless shoe sole includes a mid sole, and the midsole includes an elastic tube and a filling member with projecting flanges formed thereon. The projecting flanges have a plurality of holes respectively. Further it includes a gently curved reinforcing plate extending from the toe portion to the heel portion. Or the heelless shoe sole includes a midsole, and the midsole includes a recess having a certain depth and formed on a toe portion of the midsole. The midsole further includes a lateral through hole formed in a middle portion of the midsole and expanding from an outer side of the midsole toward an inner side of the midsole so as to be fit to the arcuate shape of a human foot sole. The midsole still further includes a V shaped groove formed in an arcuate portion of a heelless portion, and a tread face having a plurality of circular slots at a rear thereof.

FIG. 1



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Description

FIELD OF THE INVENTION

The present invention relates to a shoe sole having no heel and with the cushion improved, which gives an athletic effect same as a mountain climbing during a usual walking, and in which the waist is straightened, whereby the posture of a walker is corrected, the oscillations back and forth can be reduced during a walking, and the uppers of shoes can be protected.

DESCRIPTION OF THE PRIOR ART

In heelless shoes, the shoe has to act like a lever supported on a middle portion C between a toe portion A and a heel portion B. Therefore, in the case where the slope of the heel portion B is more than 15 degrees relative the toe portion A, the foot sole is slipped forward. Therefore, the leading end portions of the toes generate frictions by press-contacting with the upper of the shoe, with the result that the toes are damaged, and that the upper is deformed. Further, in the case where the slope of the portion between the middle portion C and the heel portion B is more than 25 degrees, an effect is produced such that the middle portion C is withdrawn rearward.

Consequently, oscillations back and forth occur during a walking, thereby causing an instability.

Therefore, if the slope of the portion between the middle portion C and the heel portion B is about 25 degrees, the waist of a walker is straightened, and the posture of the walker is corrected. However, due to the oscillations back and forth which occur naturally, head or legs of the walker receive impacts, and therefore, an adverse effect may be produced.

Therefore, in order to correct this trend, the heel portion B is formed in an arcuate shape, and a tread face is formed starting from where the arcuate portion ends. This treadface is given a slope of about 15 degrees as in the toe portion A so as to ensure stability during the walking. In this manner, some slope is maintained during a walking.

Generally, in heelless shoes, the toe portion Aoccupies 62%, while the heelless portion of the heel portion Boccupies 38%. Therefore, the slope of the toe portion A becomes less than the slope of the heel portion B, with the result that oscillations back and forth allow some stability.

However, at the middle portion C of a heelless shoe, the slope of the heel portion B is different from the slope of the toe portion A, and therefore, the thickness of the middle portion C is necessarily increased. Consequently, the weight of the shoe sole (midsole) is increased, and due to this increased thickness of the middle portion C, the cushion disappears during the walking.

Due to this lowering of the cushion, if heelless shoes are worn for a long time, a shock absorbing is not done, with the result that the wearer of the shoes is tired. Consequently, an adverse effect appears in the waist or legs of the walker.

Due to the adverse effect and due to the increased thickness of the middle portion C, the wearer cannot walk for a long time, and therefore, the waist cannot be straightened, as well as being incapable of removing the useless flesh.

SUMMARY OF THE INVENTION

The present invention is intended to overcome the above described disadvantages of the conventional technique.

Therefore it is an object of the present invention to provide a shoe sole having no heel and with the cushion improved, in which the heelless shoes can be worn for a long time without causing an exhaustion and adverse effects, thereby improving the functional effects of the shoes and protecting the uppers of the shoes.

In achieving the above object, the present invention is characterized as follows. That is, a middle portion C of a midsole is extended rearward, and the heel is pulled toward the front, thereby eliminating the heel. Or the midsole is extended thick, but at the position of the heel, an arch is formed, thereby eliminating the heel. In the latter case, an elastic tube is installed, and the elastic tube receives a filling member having projected flanges at the both ends thereof. Thus the projected flanges and the elastic tube are made to be buried into the midsole, in such a manner that only the ends of the filling member should be exposed to the outside. Over the elastic tube, a gently curved reinforcing plate is disposed, and the reinforcing plate extends from the middle portion C to the heel portion B.

Alternatively, the elastic tube together with the filling member is not placed in the middle portion C, but a lateral through hole is formed therein so as to reduce the weight of the shoe. This lateral through hole is made to be expanded toward one side, so that the treading would be improved, and that the wearing sensation would become superior. Further at the portion where the lateral through hole is disposed, the midsole is projected upward, so that the foot sole can be massaged during walking, and that the cushioning effect would be increased. Further, a recess is formed on the upper face of the toe portion A, so that the comfortableness would be promoted.

At the heel portion, a slope is formed, so that the spreading of legs would be prevented, and that a biasing of the upper of the shoe and the consequent deformation of the upper of the shoe can be prevented. Further, a small arch is formed in front of the large arch of the heel portion, thereby bringing a rolling effect, and reducing the oscillating angle. At the heel portion of the midsole, there is formed one or a plurality of V shaped grooves. Thus during the walking, the rear heel portion

C of the midsole is made to be folded first, so that the inclination angle of the heel portion B can be naturally reduced. Owing to the V shaped grooves, the foot sole is relaxed during the treading, and a walking stability and an exhaustion recovery are ensured. Owing to a circular slot which is formed at the rear end of the heel portion, impacts are alleviated. Further, by pulling the heel toward the front, the shoes can be used as gentleman shoes rather than sports shoes.

BRIEF DESCRIPTION OF THE DRAWINGS

The above object and other advantages of the present invention will become more apparent by describing in detail the preferred embodiment of the present invention with reference to the attached drawings in which:

FIG. 1 is a partly cut-out perspective view withdecorating plates and elastic tube and a reinforcing plate disposed;

FIG. 2 is a perspective view showing an elastic tube and a reinforcing plate coupled together;

FIG. 3 is a perspective view showing a through hole and a recess;

FIG. 4 is a sectional view showing semi-spherical caps coupled to the through hole;

FIG. 5 is a sectional view showing an outsole attached over a lower furrow;

FIG. 6 is a perspective view showing a wrinkled part coupled to an upper furrow;

FIG. 6A is a longitudinal view of FIG. 6;

FIG. 7 is a perspective view showing a numerously bossed part coupled to the upper furrow;

FIG. 8 is a perspective view showing elastic part coupled to a V shaped groove;

FIG. 8A is a longitudinal sectional view of FIG. 8;

FIG. 9 is a perspective view of another example showing pockmarks around the arch;

FIG. 10 is a perspective view of another example of heelless shoe;

FIG. 11 is a perspective view showing another example of the midsole.

FIG. 12 is a perspective view of a midsole showing the reinforcing projection portion coupled upper.

FIG. 13 is a perspective view showing fo FIG. 12

FIG. 14 is a perspective view showing a shoesole with reinforcing projecfed portion.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in FIGs. 1 and 2, as coming from the toe portion toward the middle portion of a midsole, if the middle portion is made thick, an elastic tube 17 is provided in such a manner that the elastic tube 17 should pass laterally through the middle portion C. The elastic tube 17 is coupled with a filling member 18, on the both ends of which there are formed a pair of flanges with a plurality of holes formed therein. The midsole is molded by applying a foaming molding process. Thus, the elastic tube 17 and the projected flanges19 are buried into the midsole, in such a manner that only the both ends of the filling member should be exposed to the outside.
Over the elastic tube 17, there is disposed a gently curved reinforcing plate 16, in such a manner that the reinforcing plate 16 should extend from the middle portion C to a heel portion B.

Under this condition, owing to the holes 23 which are formed in the projected flanges 19 of the filling member 18, the filling member 18 will not depart from the elastic tube 17 after the molding. On the bottom of the reinforcing plate 16, there are formed reinforcing projections 20 so as to reinforce the strength of the reinforcing plate 16. This reinforcing plate 16 extends from the middle portion of the midsole to the heel portion.

Further, decoration plates 21 with slits 24 formed therein are buried into the side portion and the heel portion of the toe portion A and the heel portion B, in such a manner that only decorating projections would be exposed to the outside, thereby enhancing the decorating effect.

Further, as shown in FIGs. 3 and 11, on the upper face of a toe portion A of the midsole, a recess 1 is formed, so that the recess would fit to the human foot sole. In a middle portion C of the midsole between the toe portion A and a heel portion B, there is formed a lateral through hole 3, in such a manner that the lateral through hole should be spread from the outer side toward the inner side so as to he fit to the human foot sole. In the case where the lateral through hole 3 is formed, a projected portion 2 is made to project on the corresponding upper face of the midsole, so that the projected portion 2 would give a massaging effect to the human foot sole.
Further, on the heel portion of the midsole, there is formed an inclined projection 25 which is inclined from the rear outerside toward the inner portion. Thus, during the walking, thespreading of the feet is prevented.
Under this condition, the projected portion is formed the middle of the midsole which is projected like the sunken sole of a foot, as shown in FIG. 12 the reinforcing pro-

jecfed portion 28 is formed to one side of projected portion2, as shown in FIG. 13, the reinforcing projected portion being opening outside of upper 29, and that it's provided modification of upper 29, the projecfed portion 2, being extended by reinforcing projected portion 28, is formed a certain length, thus, effect of fiuger-pressure and the upper 29 can reinforced.

The recess 1 of the toe portion, the projection 2 ofthe middle portion and reinforcing projecfed portion with an upwardly the projecfion being extended by projection portion. and the inclined projection 25 of the heel portion can he used not only in the heelless shoes but also in any other shoes such as gentleman shoes and the like.

Further, the lateral through hole 3 which is formed in the middle portion of the midsole may not be formed in the lateral form, but may be formed in a special shape as shown inFIG. 4. That is, it is provided in such a form that two semi-spherical caps 8 are coupled together with the convex portions of them contacted together and the open portions of them facing away from each other. Or instead of the lateral through 3, a furrow 9 may be formed in a downwardly open shape as shown in FIG. 5, and then, an outsole may be covered over it. Or instead of the downwardly open furrow 9, an upwardly open furrow 11 may be formed as shown in FIG. 6. In the furrow 11, a wrinkled part 12 or a numerously projected part 4 as shown in FIG. 7 may be filled, so that the foot sole may receive a massaging effect.

Further, on a projected portion 2 around the lateral through hole 3 and on a projected portion 2a around the furrow 9, there are provided pockmarks or numerous protuberances, so that the human foot sole would receive massaging effects.

Furthar, on the projected portions 2 and 2a, or on the wrinkledpart and the numerously projected part 4, there can be attached a magnet or a bioceramic radiating far infrared rays, so that the human blood circulation would be promoted.

Further, in the lateral through hole 3, the downwardly open furrow 9, the upwardly open furrow 11 or the semi-spherical cap 8, there can be installed an air bag 13, so that a superior elasticity may be realized, and that a shock absorbing effect may be obtained. Such through hole and the airbag may be provided in the side portion or in the heel portionof the midsole, thereby improving the external aesthetic appearance.

In the front portion of the heel portion B, a small arch 15 is formed. Further, a V shaped groove 5 is formed under the arcuate portion of the heel portion of the midsole, and a plurality of circular slots 14 are formed on the heel portion of a treading face 7 which is formed to the rear of the V shaped groove 5, as shown in FIG. 6.

In the V shaped groove 5, an elastic part 6 is attached as shown in FIG. 8, so that the restoring force can be improved.

Under this condition, the small arch 15 which is formed in front of the heel portion B as shown in FIGs. 3, 6 and 7 induces a first oscillation when the heelless portion B is oscillated, thereby reducing the oscillating angle. The V shaped groove 5 is folded earlier than when the heel portion B is contacted with the ground, and therefore, the oscillation angle can be reduced. The V shaped groove can be provided in the number of one or in a plurality, and in the case where a plurality of them are provided, the depths of the V shaped grooves 5 are made to be different or same. The shapes of the V shaped grooves 5 can be designed to be various, and the V shaped grooves 5 slacken the human foot soles, thereby preventing the exhaustion of the human feet.

The circular slot 14 as shown in FIGs. 3, 6 and 7 has a small size and may be provided in a stepped form, or it maybe formed in a large size.

Generally in a heelless shoe, the middle portion connected horizontally to the toe portion is made thick, and an arch is formed at the heel portion, thereby forming a heelless shoe having an inclination angle. To compensate the thick middle portion, there is provided a lateral through hole 3 or an elastic tube 17, thereby improving the cushioning effect.

However, in order to improve the cushioning effect, a downwardly open arch 27 is formed at the middle portion, and a heel 26 is formed at a position where the downwardly open arch ends or where it starts, thereby forming a heelless shoe.

Or the heel is formed at a position where the middle portion ends or where it starts, and an arch 27 is formed at the rear of the heel. Further, a treading portion is formed at position where the arch ends, thereby forming a heelless shoe.

In the case where the toe portion and the middle portion are disposed in a horizontal relation, then the shoe can rarely be used as a sports shoe. However, if an upwardly openarch is provided between the toe portion and the middle portion, and if the heel is formed at the middle portion, then it can be applied to the gentleman shoes.

Therefore, owing to the recess 1 which is formed on the toe portion of the midsole with a certain depth and a shape, if the shoes are put on, the human foot sole is settled because of the inclined projection 25 of the heel portion of the midsole, and the spreading of the human foot soles is prevented, thereby improving the wear sensation. Since the foot sole is comfortably settled, the slipping of the foot and the twisting of the uppers of shoes is not generated. Further, the lateral through hole 3 is expanded from the outer side toward the inner side, and the projected portion 2 is provided above the lateral through hole 3. Therefore, the cushioning of the shoes is improved during a walking, and the human feet produce natural frictions, and reinforcing projeted portion 28 with an upwardly the projection being extended by projection portion 2 protect upper 29 therefore it's provided modification of upper 29

Further, the small arch 15 causes first rolling when the

center of gravity of the heelless portion is shifted, thereby reducing the impacts due to the oscillations. Further, in the case where the center of gravity is shifted to the heel portion B owing to the V shaped groove 5, first the heel portion B is folded, and the slope is reduced. Consequently, the angle of the tread face 7 is reduced, and owing to the slots 14 which are formed on the rear end of the tread face 7, and owing to a circular slot 14 of the heel portion, a shock absorbing is realized. As a result, a walking can be done in a natural manner, and owing to the slackening of the human foot soles because of the V shaped groove 5, the exhaustion can be prevented.

Further, on the exposed portion of the filling member 18 which is inserted into the elastic tube 17, various logs are carved, so that the external aesthetic appearance would be improved. Further since the reinforcing plate extends from the toe portion to the heel portion, the restoring force is strong, thereby providing a strong shoe.

Further, the decorating plates 21 in which the slits 24 are formed are buried into the side portions and the rear part of the toe portion A and the heel portion B, and they are not to be easily detached from the shoe, while only the decoration projections 22 are exposed. Therefore, a decorating effect can be reaped.

According to the present invention as described above, owing to the recess which is formed on the toe portion of the midsole, and owing to the inclined projection, formed said heel portion, the human foot is naturally settled, and the spreading of the human foot soles is prevented, with the result that the spreading of legs is prevented, that a secure wear sensation is ensured, and that the uppers of shoes can be prevented from being swept to oneside. and reinforcing projected portion protect outside of upper and that a secure wear sensation is sustained. Further, even in the case where the slope of the heel portion is large, the toes are not pushed toward the front, so that the damage of the toes can be prevented. Further, owing to the elastic tube and the lateral through hole of the middle portion of the midsole, the weight of the shoe is reduced, and the cushioning effect is increased. Further, the projected portion which is formed above the elastic tube and the lateral through hole gives a massaging effect to the human foot sole, and prevents the exhaustion of the human body. Further, the heel is formed at a position where the arch ends, and therefore, the midsole is prevented from becoming thick. Further owing to another small arch and the V shaped groove which is formed in the arcuate portion of the heel portion, when the heel portion is contacted to the ground, the small arch aid the V shaped groove are first rolled and then folded, so that the oscillating angle can he naturally reduced during a walking. Therefore, the walking should be always comfortable. Further, the V shaped groove slackens the human foot soles, and therefore, even along wearing of the shoes will not bring an exhaustion. Further, owing to the heel which is formed at the middle portion of the midsole, the shoe can be applied to the gentle man shoes.

Further, the filling member which is inserted into the elastic tube is exposed to the outside, and therefore, various marks or logos can be put on the exposed ends of the filling member, thereby improving the aesthetic appearance. The decoration is further enhanced by utilizing the decorating projections which are formed on the side and rear of the toe portion and the heel portion.

Claims

1. A heelless shoe sole comprising a midsole, said midsole comprising:

   an elastic tube buried into a middle portion of said midsole;

   a filling member inserted into said elastic tube and having projected flanges with a plurality of holes;

   said projected flanges and said elastic tube being buried into said middle portion of said midsole, only both ends of said filling member being exposed; and

   a gently curved reinforcing plate placed over said elastic tube and extending from said middle portion to a heel portion, whereby a cushioning function is improved.

2. A heelless shoe sole comprising a midsole, said midsole comprising:

   a recess having a certain depth and formed near a toe portion;

   a lateral through hole formed in a middle portion of said midsole, said lateral through hole being expanded as coming toward inward, for forming a projected portion fitting to a concaveness of a human foot sole;

   an inclined projection formed on said heel portion, said inclined projection being inwardly inclined;

   a V shaped groove formed on a heelless portion; and a treading face formed at a rear of said V shaped groove, with a circular slot 14 being formed above said treading face.

3. The heelless shoe sole as claimed in any one of claims 1 and 2, wherein said lateral through hole or said elastic tube is covered with a projected portion.

4. The heelless shoe sole as claimed in claim 2,

wherein said lateral through hole consists of two semi-sphericalcaps coupled together, with their convex portions contacted together, and with their open portions facing away from each other.

5. The heelless shoe sole as claimed in claim 2, wherein said lateral through hole consists of a downwardly open lateral furrow of a ceratin depth, its opening being covered by an outsole.

6. The heelless shoe solo as claimed in claim 2, wherein said lateral through hole is replaced with an upwardly open lateral groove, its upper opening being covered by an upwardly projecting folded cap.

7. The heelless shoe sole as claimed in claim 2, wherein said lateral through hole is filled with an air bag.

8. The heelless shoe sole as claimed in claim 2, wherein said V shaped groove of said arcuate portion of said heelless portion is filled with an elastic member.

9. The heelless shoe sole as claimed in any one of claims 1 and 2, wherein a small arch is formed in front of said heel portion.

10. The heelless shoe sole as claimed in any one of claims 1 and 2, wherein decoration plates with slits formed thereon are buried into sides and a rear of said toe portion and said heel portion during a molding of said midsole, only decorating protuberances being exposed.

11. A heelless shoe sole characterized in that a downwardly open arch is formed between a toe portion and a middle portion, said arch ends at said middle portion, and a heel is formed starting from said middle portion.

12. A heelless shoe sole characterized in a reinforcing projected portion 28 with an upwardiy the projection to one side of the middle portion of midsole and projected portion 2 being extended by a reinforcing projected portion 28 for a finger-pressure.

FIG. 1

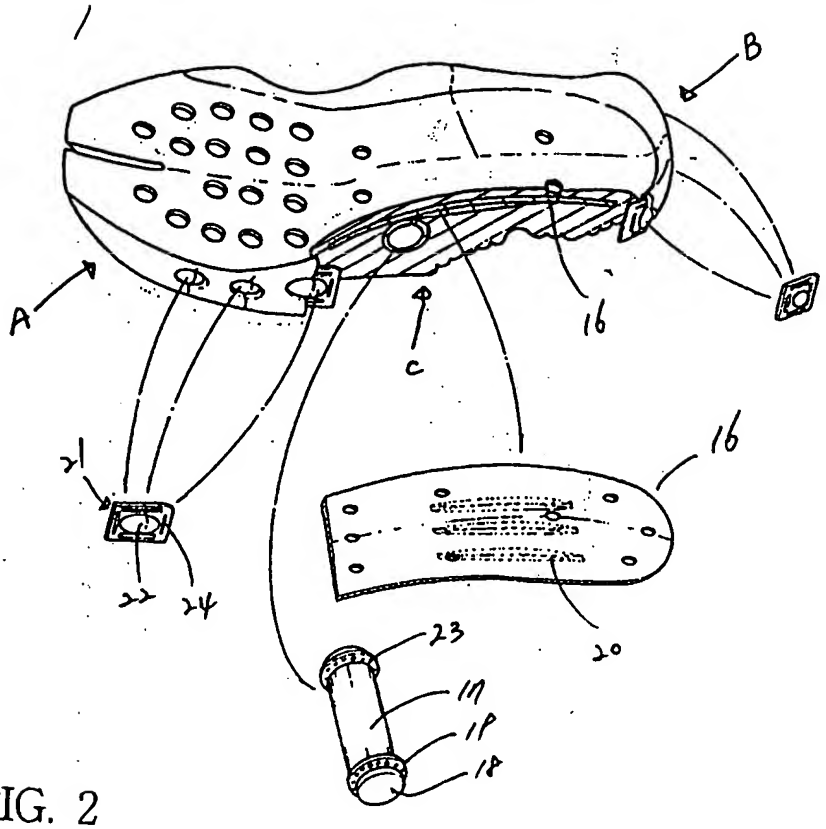

FIG. 2

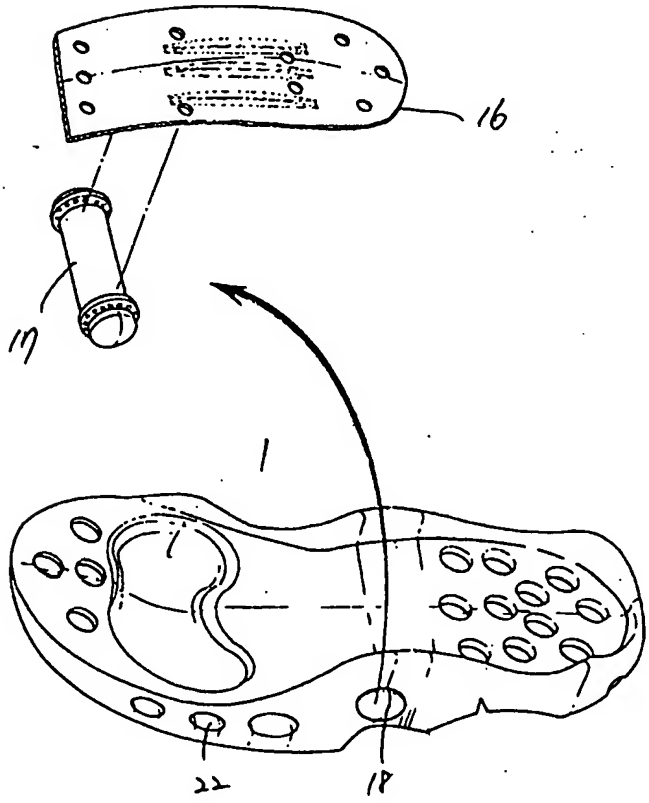

FIG. 3

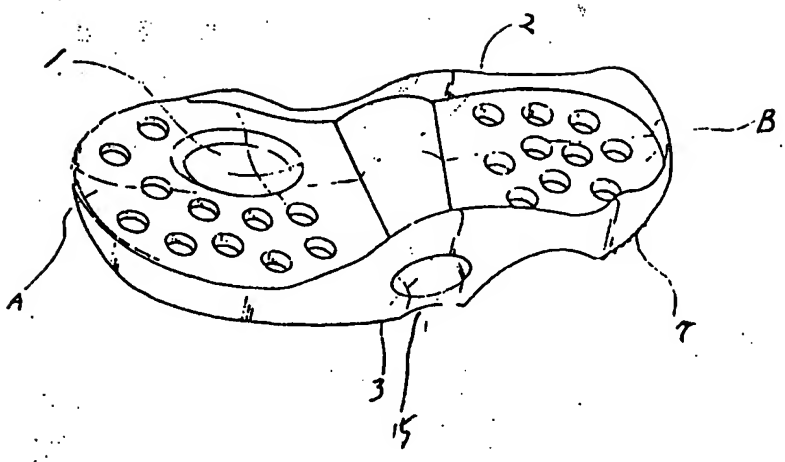

FIG. 4

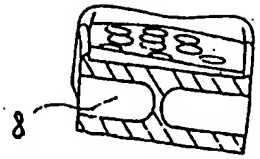

FIG. 5

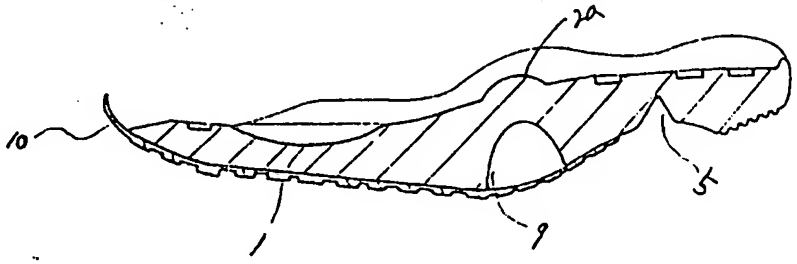

FIG. 7

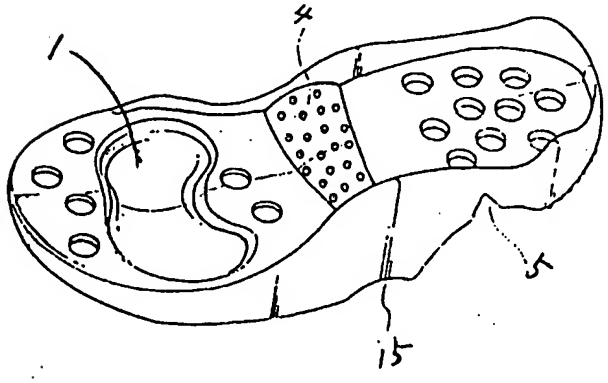

FIG. 6

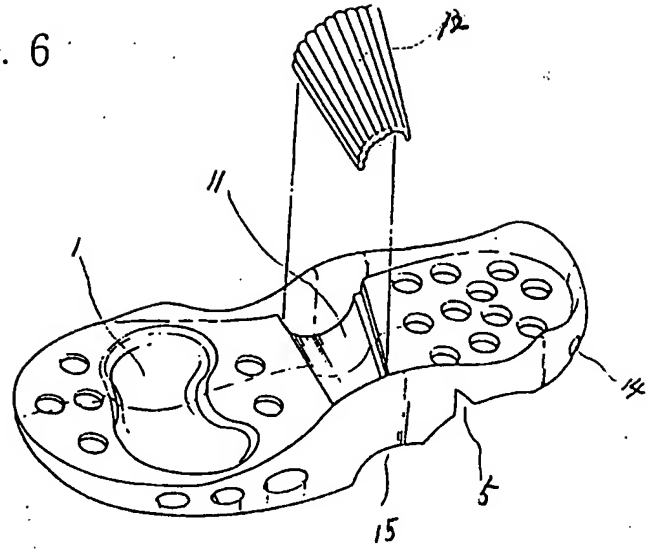

FIG. 6A

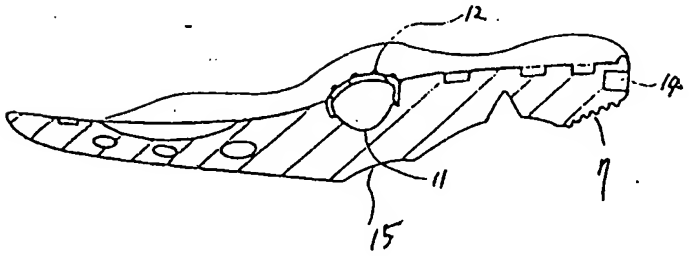

FIG. 8

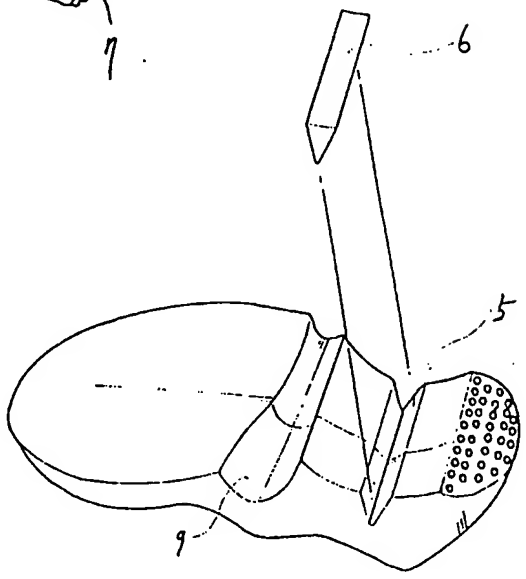

FIG. 8A

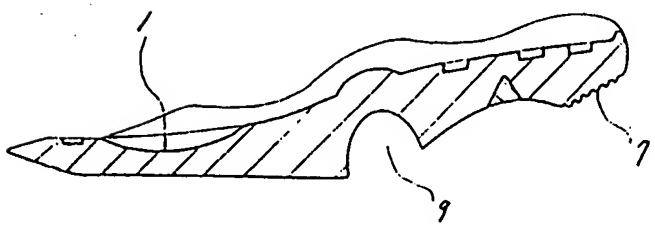

FIG. 9

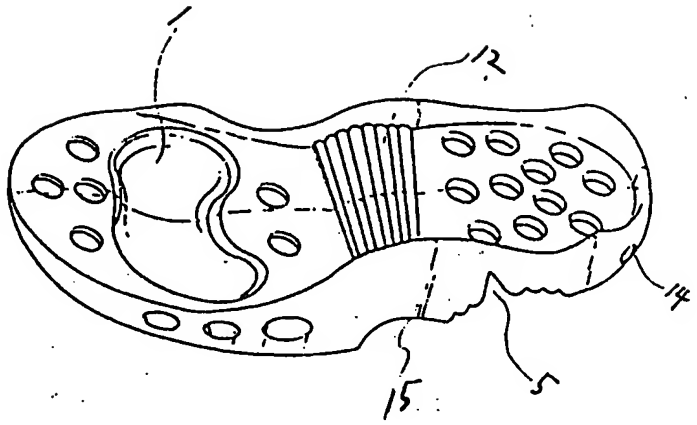

FIG.10

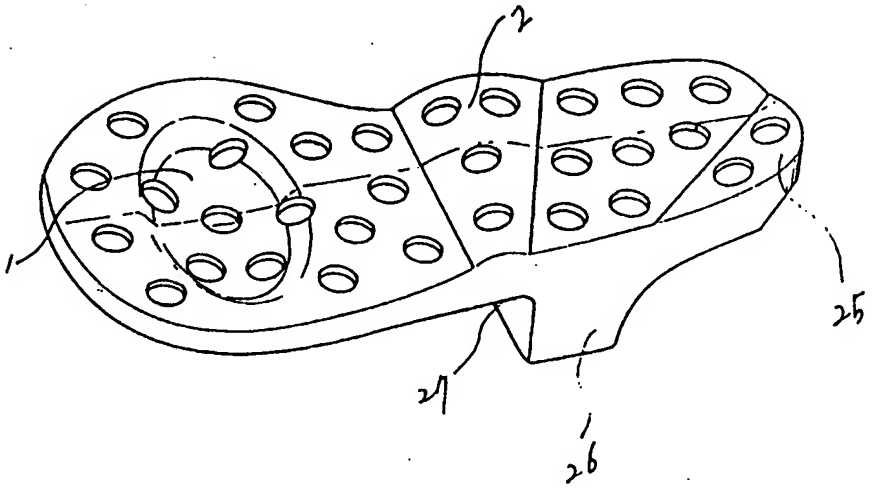

FIG.11

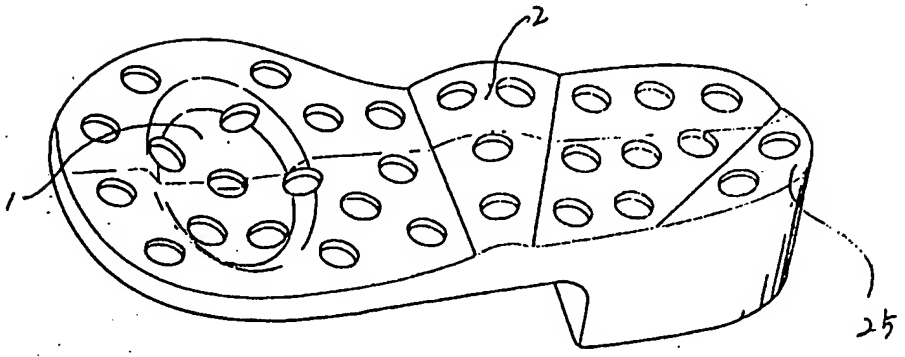

FIG.12

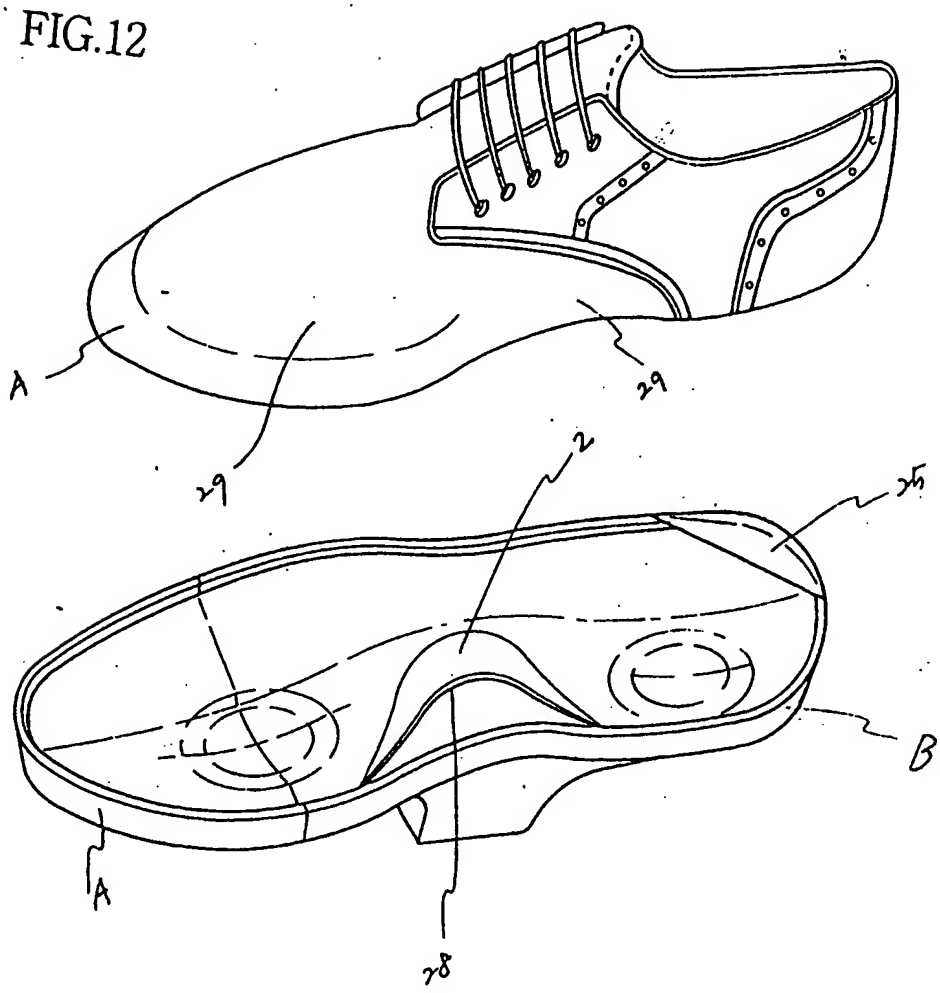

FIG.13

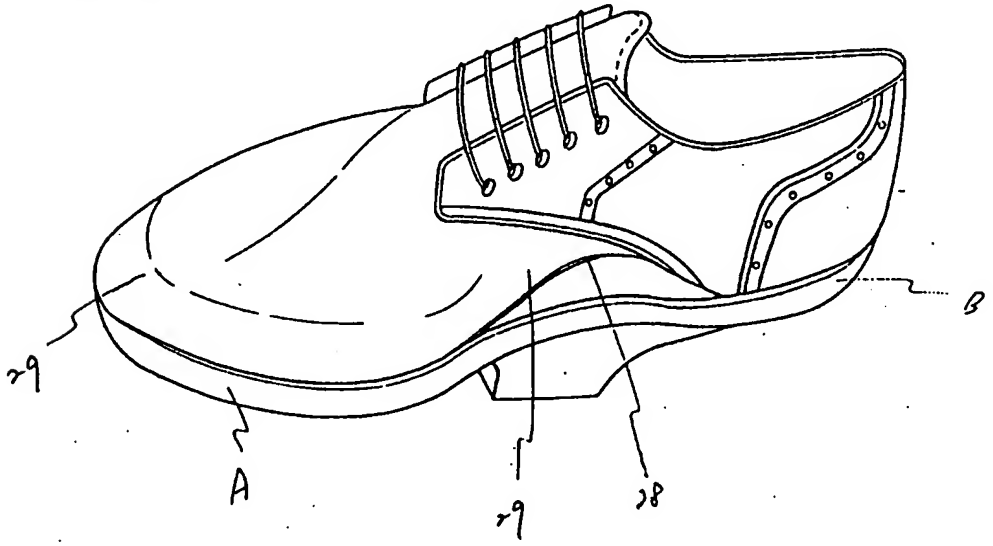

FIG.14